CLAIMS

1. A zoom lens, comprising:

four lens groups including a first lens group having a positive refractive power, a second lens group having a negative refractive power, a third lens group having a positive refractive power, and a fourth lens group having a positive refractive power, sequentially arranged from an object side, wherein when a positional state of lenses is varied from a wide-angle-end state to a telephoto-end state, the second lens group is moved to an image side, the fourth lens group is moved for compensating a variation in a position of an image plane caused by the movement of the second lens group, and the first lens group and the third lens group are fixed along the optical axis; and

an aperture stop disposed at the object side of the third lens group,

wherein the third lens group includes a negative sub-lens group having a negative refractive power, and a positive sub-lens group disposed at the image side of the negative sub-lens group with an airspace interposed therebetween, the positive sub-lens group having a positive refractive power, and

the following conditional expression (1) is satisfied:

(1) $0.4 < Da/TL < 0.5$

where Da is a distance between the aperture stop and

the image plane, and TL is an overall optical length (distance between a lens surface at the most object side in a lens system and the position of the image plane, along the optical axis).

2. The zoom lens according to Claim 1,

wherein the following conditional expression (2) is satisfied:

(2) $13 < |f3n|/fw < 18$

where f3n is a focal length of the negative sub-lens group disposed in the third lens group, and fw is a focal length of the whole lens system in the wide-angle-end state.

3. The zoom lens according to Claim 1 or 2, wherein the first lens group includes four lenses including cemented lenses of a negative lens and a positive lens, a positive lens, and a positive lens, sequentially arranged from the object side.

4. The zoom lens according to Claim 3,

wherein the following conditional expression (3) is satisfied:

(3) $2.5 < f1/(fw \cdot ft)^{1/2} < 3.5$

where f1 is a focal length of the first lens group, and ft is a focal length of the whole lens system in the telescope end state.

5. The zoom lens according to Claim 1 or 2, wherein the second lens group includes four lenses including a meniscus

negative lens with a concave thereof facing the image side, a negative lens, a positive lens, and a negative lens, sequentially arranged from the object side.

6. The zoom lens according to Claim 5,

wherein the following conditional expression (4) is satisfied:

(4) $0.42 < |f2|/(fw \cdot ft)^{1/2} < 0.5$

where f2 is a focal length of the second lens group.

7. The zoom lens according to Claim 1 or 2, wherein the fourth lens group includes three lenses including a positive lens, a negative lens, and a positive lens, sequentially arranged from the object side.

8. An imaging apparatus, comprising:

a zoom lens; and

an imager which converts an optical image formed by using the zoom lens into electric signals,

wherein the zoom lens includes:

four lens groups including a first lens group having a positive refractive power, a second lens group having a negative refractive power, a third lens group having a positive refractive power, and a fourth lens group having a positive refractive power, sequentially arranged from an object side, wherein when a positional state of lenses is varied from a wide-angle-end state to a telephoto-end state, the second lens group is moved to an image side,

the fourth lens group is moved for compensating a variation in a position of an image plane caused by the movement of the second lens group, and the first lens group and the third lens group are fixed along the optical axis; and

an aperture stop disposed at the object side of the third lens group,

the third lens group includes a negative sub-lens group having a negative refractive power, and a positive sub-lens group disposed at the image side of the negative sub-lens group with an airspace interposed therebetween, the positive sub-lens group having a positive refractive power, and

the following conditional expression (1) is satisfied:

(1) $0.4 < Da/TL < 0.5$

where Da is a distance between the aperture stop and the image plane, and TL is an overall optical length (distance between a lens surface at the most object side in a lens system and the position of the image plane, along the optical axis).

9. The imaging apparatus according to Claim 8,

wherein the following conditional expression (2) is satisfied:

(2) $13 < |f3n|/fw < 18$

where f3n is a focal length of the negative sub-lens group disposed in the third lens group, and fw is a focal length of the whole lens system in the wide-angle-end state.

10. The imaging apparatus according to Claim 8 or 9, wherein the first lens group includes four lenses including cemented lenses of a negative lens and a positive lens, a positive lens, and a positive lens, sequentially arranged from the object side.

11. The imaging apparatus according to Claim 10,

wherein the following conditional expression (3) is satisfied:

(3) $2.5 < f1/(fw \cdot ft)^{1/2} < 3.5$

where f1 is a focal length of the first lens group, and ft is a focal length of the whole lens system in the telescope end state.

12. The imaging apparatus according to Claim 8 or 9, wherein the second lens group includes four lenses including a meniscus negative lens with a concave thereof facing the image side, a negative lens, a positive lens, and a negative lens, sequentially arranged from the object side.

13. The imaging apparatus according to Claim 12,

wherein the following conditional expression (4) is satisfied:

(4) $0.42 < |f2|/(fw \cdot ft)^{1/2} < 0.5$

where f2 is a focal length of the second lens group.

14. The imaging apparatus according to Claim 8 or 9, wherein the fourth lens group includes three lenses including a positive lens, a negative lens, and a positive

lens, sequentially arranged from the object side.